Farm to School Programs

in Pennsylvania

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Farm to School Programs in Pennsylvania

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Executive Summary

Farm to school (FTS) programs have been getting more and more attention these days. FTS programs aim to increase the supply of fresh, locally grown farm products served for meals and snacks in K-12 school environments, and tend to incorporate educational and experiential components designed to increase students' understanding of and engagement with agriculture, nutrition, and health. The rising interest in and exploration of farm to school programs in the U.S., and Pennsylvania, is directly related to the convergence of recent trends facing agricultural producers and food consumers.

For example, changes in the social organization of agriculture and increased vertical integration in food systems have made it more difficult for many small and medium scale independent farmers to compete and survive. Also, rising rates of obesity, diabetes and other negative health outcomes in the U.S. population, including children, have raised concern about the nutritional quality of school meals and snacks. FTS programs address these consumption problems by connecting local farmers with school food service providers to incorporate fresh, regionally sourced foods (particularly fruits and vegetables) into school menus and provide more healthful choices.

Through quantitative and qualitative research and outreach efforts, this research documents the current forms, organization and policy needs of farm to school efforts in Pennsylvania. A primary goal of the research was to generate specific Pennsylvania-relevant information that can be incorporated into a "how-to guide" to support school administrators, agricultural producers and other stakeholders seeking either to initiate or enhance farm to school programs.

This report summarizes research conducted in 2007, including a survey of food service directors at the 501 public school districts in Pennsylvania, and a follow-up set of mini case studies conducted in seven school districts in rural and urban regions of the state.

Findings indicate that many food service directors engage in local food purchasing and support educational efforts focused on health and nutrition, agriculture and the food system. However, many were not aware that these activities are considered components of a farm to school program. Furthermore, there is evidence that food service directors are interested in expanding local food procurement and educational efforts. Case study data further show how school districts' FTS efforts reflect local needs, resources and constraints. This suggests that FTS may be better thought of, not as a relatively coherent and prescriptive set of activities, but as a broad and flexible portfolio of possible efforts from which school district and community stakeholders may draw to best meet local needs.

This report concludes with specific policy considerations that may both directly and indirectly enhance institutional conditions favorable to local level FTS activity, both procurement based and educationally based. Within these considerations, other states are identified, including Oklahoma, Connecticut and Maryland, that have recently created statewide infrastructure support for FTS. This support, which could involve the establishment of a statewide coordinator, would assist individual schools and districts in learning about, initiating and sustaining successful FTS efforts. Small grant programs to support local FTS activities are also discussed, noting that systematic evaluation is critical both to support local efforts and to develop a knowledge base that can be shared with schools interested in FTS across the commonwealth. Other policy considerations address means of reducing the logistical difficulties of local food procurement, such as costs and payment procedures, providing technical assistance and support for Good Agricultural Practices (GAP) certification compliance by farmers, and ensuring that school wellness committees have ready access to FTS information so that FTS, if appropriate, may be incorporated into the repertoire of initiatives that school wellness policies address.

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Introduction

In the last several years, "farm to school" (FTS) programs have gained the attention of educators, health professionals, parents, policymakers, farmers and others (Vallianatos et al., 2004). Most fundamentally, farm to school programs aim to increase the supply of fresh, locally grown farm products served for school meals and snacks. Some programs also incorporate educational and experiential components, designed to increase students' understanding of and engagement with agriculture, nutrition and health. The rising interest in and exploration of farm to school programs in the U.S., and Pennsylvania, emerges from a convergence of recent trends facing agricultural producers and food consumers.

For example, changes in the social organization of agriculture and increased vertical integration in food systems have made it more difficult for many small and medium scale independent farmers to compete and survive (Lyson, 2004). However, such farmers are important to the economic prospects and social well-being of rural communities. Successful stewardship of their farmland contributes to desirable rural landscapes, and access to new or supplemental markets, including local institutions, such as schools, could help stabilize and strengthen these farms (Feenstra and Kalb, n.d.).

Also, rising rates of obesity, diabetes and other negative health outcomes in the U.S. population, including children, have stimulated concern about the nutritional quality of school meals and snacks (Dalton, 2004). Efforts to shift to more healthful menus, characterized by fewer processed and "minimal nutritional value" foods and more fruits and vegetables, are widely seen as consistent with new wellness orientations. FTS programs address these consumption problems by connecting local farmers with school food service providers to incorporate fresh, regionally sourced foods (particularly fruits and vegetables) into school menus and provide more healthful choices.

Ranging from local sourcing of a single product, such as apples, to more ambitious programs that integrate local sourcing of multiple products with curricular enhancements and farm visits, FTS projects have now been launched in many parts of the U.S., including Pennsylvania. National nonprofit organizations, such as the Community Food Security Coalition, and federal agencies, such as the U.S. Department of Agriculture (USDA), now offer general instruction manuals and guides for developing FTS programs (Kalb et al., 2004; USDA, 2005). In Pennsylvania, interest in FTS has also grown, receiving attention from, among other groups and agencies, the Pennsylvania Department of Agriculture, the Pennsylvania Association for Sustainable Agriculture, Pennsylvania Advocates for Nutrition and Activity, and The Food Trust.

Other states have also compiled reports and informal documents identifying issues and assessing the prospects for FTS (Oklahoma Food Policy Council, 2003; Grubinger, 2004). In their survey of school food service directors in Michigan, Izumi et al. (2006) found 73 percent reported a high degree of interest in obtaining school food from local producers. A study conducted by UCLA in the Los Angeles area found that FTS programs were associated with increased fruit and vegetable intake among students (Slusser and Neumann, 2001). However, more comprehensive research on or evaluation of FTS has been limited to date.

This indicates a pressing need for research and outreach, especially to support state and national policy initiatives. For example, part of the Child Nutrition and WIC Reauthorization Act of June 2004 seeks to strengthen community partnerships among schools and farmers to provide school children with fresh fruits and vegetables, while helping them understand the source and nutritional values of their food. Additionally, starting in academic year 2006-2007, schools receiving federal lunch program assistance have been mandated to develop local wellness policies promoting nutrition, physical activity and overweight prevention.

Beyond this, the Child Nutrition and WIC Reauthorization Act also expanded the popular Fresh Fruit and Vegetable Pilot program (FFVP) to several states, including Pennsylvania. An evaluation of the FFVP program for the 2002-2003 school year (prior to Pennsylvania's involvement) indicated that schools were allocated $94 per student for expenses of procuring fresh fruits and vegetables. While 100 of the 105 schools in the initial evaluation thought it would be feasible and desirable to continue beyond the pilot, they linked feasibility to the continuation of public funding. Thirteen of the 105 schools procured the fresh fruit and vegetables for the pilot from local growers and orchards. Pennsylvania's inclusion in the FFVP program now provides legislative and financial support for greater institutionalization of farm to school programs in Pennsylvania.

Section 9 of the National School Lunch Act encourages institutions participating in the National School Lunch Program and the School Breakfast Program to purchase locally produced food. This emphasis received support from state policy in Pennsylvania School Laws and Rules (24 PS 5-504), which states, "It shall be legal for boards of school directors to authorize the proper school employee to purchase perishable food supplies for cafeterias without advertising for bids." Because the small purchase threshold at the federal

level is $100,000 and many farm to school purchases are often below this threshold, schools (and certainly smaller school districts) actually face relatively minimal regulatory barriers to purchasing local foods, although there may be other operational and perceptual concerns.

Given recent public interest and policy attention, various FTS efforts are now underway in Pennsylvania. However, they have received little systematic attention by researchers or outreach specialists, and, as a result, little is known about how they operate or the challenges they may face, individually or collectively. School and community factors that either limit or enhance opportunities for implementing FTS programming in Pennsylvania remain poorly understood. In short, a broader analytic perspective focusing on the integrated systems of food production, distribution and consumption (Sobal et al., 1998) could help clarify the links between community well-being, including nutritional health through farm to school initiatives, and where (and how) food is produced and consumed.

Taking such a food systems perspective, recent research on two farm to school programs in Pennsylvania found that local school wellness policies support school and community-based partnerships to develop farm to school programming (Bagdonis et al., 2006). However, differing human and educational resources in large, urban settings as opposed to smaller, rural settings can affect the priorities and possible approaches for FTS programs.

Goals and Objectives

The project addressed the following three goals:

- To gather comprehensive information across all school districts in Pennsylvania regarding the current context and practices of food purchasing and preparation in Pennsylvania public schools.
- To conduct in-depth and context-specific mini case studies of a limited number of Pennsylvania school districts representing the range of current farm to school engagement and practices.
- To produce a how-to guidebook on developing and sustaining farm to school programs in Pennsylvania.

Methodology and Analysis

This study used a quantitative statewide survey of food service directors as well as a series of qualitative local case studies focused on school-farmer relationships and the factors that facilitate and/or constrain the development of FTS efforts.

The purpose of the survey of Pennsylvania food service directors was to determine the type and extent of FTS activity statewide, and provide information about demand for produce from schools so that farmers and other agricultural producers can better develop local marketing efforts. Survey data were also used to select analytically significant individual "critical" case studies (Yin, 2003) to gain better understanding of the community-level processes and conditions that facilitate and/or constrain the development of effective and sustainable FTS programs. Data from both the survey and the case studies provide information that can help school administrators and food service directors facilitate local food procurement, and work more effectively with Pennsylvania farmers. This information can similarly assist farmers in identifying effective strategies for marketing products to schools. Both the survey and the case study methodologies are described in greater detail below.

Food Service Director Survey

With support from a Health Thematic Initiative Outreach Grant from Penn State University, the researchers developed a mail survey for public school food service directors in Pennsylvania. The survey was mailed to the food service directors of all public school districts in Pennsylvania. The survey included questions about the respondent's familiarity with FTS, opinions about the benefits and challenges of local food purchasing, actual food purchasing practices, structure and capacity of the respondent's school district food service and some limited information about the respondent, including age, gender and years in current position. The Division of Food and Nutrition of the Pennsylvania Department of Education provided addresses and contact information for respondents. The survey included a letter of support from the Pennsylvania Department of Agriculture.

Table 1. Patterns of Survey Response Across Urban-Rural Location

	Response		Non-Response		Total
	N	%	N	%	N
Urban	182	75	61	25	243
Rural	196	76	62	24	258

Note: The researchers used the Center for Rural Pennsylvania's definition of rural: a school district is designated rural when the number of persons per square mile within the county or school district is less than 274, the average number of persons per square mile in Pennsylvania, according to 2000 U.S. Census data.

Table 2. Farm to School Activity: FTS-as-Procurement

Procurement Steps District Has Taken in Last Three Years	Percentage of Respondents
Served meals featuring local or Pennsylvania products	34
Begun and/or expanded purchasing of local foods to prepare and serve in my school district	17
Developed purchasing relations with local farmers	10

The final survey response rate was 75 percent (N=378). Table 1 illustrates the patterns of survey response across urban and rural school districts.

Survey Results

One of the most striking findings from the survey is the relatively low degree of recognition of FTS. The first question on the survey gauged overall familiarity with FTS among respondents. Of all 378 respondents, only four food service directors were "very familiar" with FTS and only 34 (9 percent) were "familiar, but don't know all the details." Slightly over half of respondents had heard of FTS, but didn't really know what it involved and nearly 20 percent had never heard of FTS.

Evidence of FTS Activity in Pennsylvania Schools

Despite the relatively low recognition of FTS as a term describing a specific set of school practices, the survey data indicate that FTS-type activities take place in many Pennsylvania school districts. For example:

- 35 percent of respondents had served meals in the last year featuring local or Pennsylvania products;
- 23 percent helped to organize student visits to a farm or farmer's market;
- 21 percent worked with teachers to include information about nutrition, local food and/or agriculture in the curriculum;
- 19 percent were involved in planting a school garden, and;
- 16 percent had begun or expanded the purchasing of local foods to serve in the school district in the past year.

This research broadly distinguishes between two types of FTS activity depending on whether it is primarily procurement-related (oriented around purchasing and serving local foods for student consumption), or whether it is education-related (oriented around increasing student knowledge and awareness of health, nutrition, and/or local food systems). However, in practice, these two categories often blur. For instance, local foods served in the cafeteria may be accompanied by student posters about health or local foods. Foods grown by teachers and students in school gardens may occasionally be prepared in school cafeterias and served to students. Nonetheless, this broad procurement/education distinction remains a useful way of distinguishing some of the main types of FTS.

The survey answers reflect the amount of district participation respondents indicated in procurement-related (cafeteria-based) FTS. Table 2 shows the percentages of respondents reporting procurement-related FTS activity.

Table 3 shows the frequency of education-oriented FTS activity. Twenty-three percent of respondents said their district took students to visit a farm or farmer's market within the last three years, while 21 percent worked with teachers to include information about nutrition, local food and/or agriculture in the curriculum. Within the last three years, 19 percent of respondents' districts planted a school garden, and 7 percent invited a farmer to their school to support education about local food and agriculture. About 3 percent of respondents said their district held a farmers' market at school, while 1 percent held a student-led market featuring local produce.

Although recognition of FTS was low, there appears to be substantial potential interest in FTS. For example:

- 93 percent of food service directors believed that local food purchasing supported local economies and communities;
- 88 percent believed that FTS would strengthen school-community relations, and;
- 67 percent expressed interest in connecting their school district with local producers.

While many respondents were interested in FTS, they were unsure about how to implement it.

In short, many respondents were clearly interested in implementing FTS, even if their interests were tempered by a lack of knowledge about not only FTS as a school-based initiative, but also the more pragmatic and logistical concerns associated with local food procurement.

Table 3. Farm to School Activity: FTS-as-Education

FTS Educational Activities District Has Done/Held in Last Three Years	Percentage of Respondents
Took students to visit a farm or farmer's market	23
Worked with teachers to include information about nutrition, local food and/or agriculture in the curriculum	21
Planted a school garden	19
Invited a farmer to a school to support education about local food and agriculture	7
Other steps...to connect students with local farms and agriculture in the past 3 years	3
Held a farmer's market at school	3
Held a student-led market featuring local produce	1

Table 4. Top Five Stated Benefits of Local Food Purchasing

Percentage who:	Somewhat Agree	Strongly Agree	Total
Local food purchasing increases support of Pennsylvania farms and/or businesses	45	51	97
Schools support their local economy and local community by purchasing local foods	46	47	93
Local food purchasing enhances school district public relations	60	28	88
Schools know more about the sources of local foods	44	14	58
Local food purchasing helps preserve open space and the environment	35	19	54

Among the food service directors, 17 percent reported summer feeding programs in their districts, a significant figure to note given the seasonality of most fruits and vegetables grown in Pennsylvania. About 56 percent reported the presence of salad bars in their cafeterias. While many cafeterias increasingly rely on pre-prepared entrees, on average, food service directors reported that 43 percent of the items prepared for their districts are made from scratch. Only 5 percent of respondents reported that no food was prepared from scratch for their cafeterias.

Table 4 summarizes the food service director responses to a set of questions on the main benefits of local food purchasing by school districts. The benefits respondents most strongly identified with were supporting local farms, businesses, community and local economy, and enhancing the relationship between the school and the community. Interestingly, obesity and child overweight had notably less salience among food service directors with regard to FTS. Slightly more than one-quarter of respondents "somewhat agreed" that local food purchasing could help address child obesity, and only 7 percent "strongly agreed." The same is true of items related to greater health benefits of local foods and improved taste.

Table 5 summarizes the main problems or challenges associated with local food purchasing. Seasonality and availability are identified as significant problems, along with quality, safety and delivery issues. Respondent comments elaborated on these concerns and others. Of the 85 respondents who commented, 42 noted concerns with and/or barriers to local food procurement. Table 6 lists the top concerns and FTS barriers noted by respondents within the written comments on the survey. The number of mentions of concerns and barriers exceeds 42 because some respondents noted multiple concerns.

Table 5. Top Five Problems of Local Food Purchasing

Percentage who:	Somewhat Agree	Strongly Agree	Total
Seasonal availability of local fruits and vegetables	49	32	80
Inadequate supply of local foods	41	16	56
Local foods are inconsistent in quality	41	7	48
HAACP compliance issues with local foods	31	16	47
Delivery issues with local foods	35	11	46

These themes are further echoed in Table 7, which ranks the factors that would increase the likelihood of food service directors buying local foods, as identified in the closed-ended survey items.

Table 8 summarizes the top informational resources that would be of assistance in local food purchasing decisions. More than 90 percent of respondents believed that increased knowledge about local producers and suppliers would aid in local food purchasing. Nearly 80 percent also agreed that a "how-to" guidebook would be a helpful resource.

Table 6. Top Concerns and FTS Barriers Noted by Food Service Directors in Written Survey Comments

FTS Concern/Barrier	# of Mentions
Logistical problems (e.g. working with multiple vendors, delivery issues, purchasing, storage, etc.)	12
Availability (including seasonality of Pennsylvania produce)	11
Purchasing done through local supplier or contract operation	10
Cost	7
Food safety	6
Food quality	4
Identifying farmers/suppliers	3
Student preferences	1
Increased labor needs for food preparation	1

Tables 9 and 10 show purchasing patterns of foods bought fresh over the previous year from farmers and/or other sources. Table 9 lists fruits and vegetables produced within Pennsylvania and Table 10 shows meat, poultry, dairy and honey products produced in Pennsylvania. On average, respondents reported purchasing 22 different fruit and/or vegetable items from this list. However, on average, respondents reported purchasing only one item directly from a local producer. This underscores the finding in Table 8 on the lack of information about local producers and/or insufficient availability of desired local foods. It is interesting to note, for example, that while more than 93 percent of food service directors bought apples, only 15 percent reported buying them from local farmers. Similarly, 89 percent reported buying broccoli, but only about 3 percent bought from

Table 7. Top Five Factors that Would Increase the Likelihood of Local Foods Purchase

Local food purchase would be more likely if… (figures represent percentages)	Somewhat Agree	Strongly Agree	Total
Local foods were competitively priced	53	34	87
Local foods were more available	60	22	82
There were financial incentives to purchase local food	37	44	81
There were one place for ordering from multiple farmers	42	37	81
There were stronger assurances of safety regarding local foods	41	37	78

Table 8. Top Five Needed Informational Resources to Assist in Local Food Purchasing Decisions

It would be helpful if the respondent had… (figures represent percentages)	Somewhat Agree	Strongly Agree	Total
Lists of local suppliers and food products from local sources	44	47	90
Better health and safety information about local foods	43	46	90
Better information about relevant state and federal regulations	43	44	86
Assistance in developing a system for buying from multiple sources	42	36	78
A guidebook or manual on how to source and purchase local foods	46	31	78

local or regional farmers. Numerous other locally grown foods show similar disparities in purchase patterns. This suggests possible disconnections between local production, local marketing avenues, and the produce demands of public school districts.

Mini Case Studies

Mini case studies were conducted as focused, yet comprehensive investigations. Table 11 on Page 10 shows the principal case study districts. While farm to school activities were the central concern, they were examined with regard to their broader school and community contexts. Mini case studies sought to identify and illuminate different relationships, interactions and links between school communities and farmers/food producers that affect the success and sustainability of farm to school programs.

The principal stakeholders in each case study site included: school principal, school board member, school food service director, school nurse, parent (ideally one serving on wellness committee, PTO/PTA, or other group potentially concerned with school food service), local/regional farmer/food producer who has supplied the school, and a representative of non-school community organization, either directly involved with any FTS-type activity or associated with potentially related agriculture, wellness or community activities.

Additional stakeholders were also interviewed (depending on the particular circumstances of the case and available time), including: a teacher who has shown interest or championed FTS programming, the district

Table 9. Fresh Fruit and Vegetable Purchases by Food Service Directors in the Last Year from Farmers and from Other Sources

	Percent purchased from	
	farmer	other source
Apples	15	93
Asparagus	1	8
Beans (lima)	<1	8
Beans (snap)	1	1
Beets	<1	15
Blackberries	<1	6
Blueberries	2	27
Broccoli	3	89
Cabbage	2	61
Cantaloupe	3	82
Carrots	3	96
Cauliflower	2	83
Celery	2	96
Cherries (tart)	<1	13
Cherries (sweet)	<1	14
Cucumbers	3	93
Corn (sweet	1	34
Eggplant	<1	7
Lettuce	2	96
Mushrooms	1	48
Nectarines	1	36
Onions	3	90
Peaches	2	53
Pears	2	73
Peas	1	34
Peppers	4	86
Plums	1	29
Potatoes	2	77
Pumpkins	1	5
Raspberries	-	12
Spinach	1	49
Squash (summer)	<1	11
Squash (winter)	<1	10
Strawberries	2	74
Tomatoes	5	95
Turnips	-	5
Watermelon	3	82
Other	<1	16

Table 10. Fresh Meat, Poultry, Dairy and Honey Purchases by Food Service Directors in the Last Year from Farmers and from Other Sources

	Percent purchased from	
	farmer	other source
Beef	1	60
Ham	<1	53
Chicken	1	51
Turkey	<1	51
Eggs	3	72
Milk	7	83
Yoghurt	2	84
Cheese	1	84
Honey	-	39

Table 11. Farm to School Case Study School Districts

District	County
Montoursville	Lycoming
Bellwood-Antis	Blair
State College	Centre
Pittsburgh	Allegheny
Mifflin County	Mifflin
Minersville	Schuylkill
Neshannock Township	Lawrence

superintendent, an additional participating farmer, especially if FTS sourcing is through a farmer cooperative, organization or alliance of some sort, and a farmer who previously supplied a school but has ceased to do so.

Within the various stakeholder categories, specific individuals were targeted for interviews based on informal referrals suggesting they were interested in either FTS specifically or agriculture/food and/or health/nutrition issues more generally. This selection process aimed to maximize the likelihood of interviewing stakeholders with explicit or potential interest in issues relevant to the development of FTS.

To provide background and context for the district case studies, themes in various secondary sources were also examined and analyzed. These materials included:

1. School website, especially any pages addressing food, health or wellness, or environmental concerns.
2. Relevant school brochures or publications.
3. School newspapers or newsletters.
4. School lunch menus.
5. Any educational or curricular materials used at the school either by school personnel or supporting organizations for instruction on food sources, food processing, nutrition or farming.
6. School wellness policy documents.

On average, seven people were interviewed at each site (minimum six, maximum 12) for a total of 52 interviews.

Mini Case Study Results

Each of the seven case study sites had procurement-based FTS programs. Five of the seven had additional educational components. Relatively few districts, however, were engaged in direct purchasing relationships with farmers. Instead, most of the local food purchased came into the district indirectly through local wholesalers and other purchasers; only two districts maintain direct purchasing relationships with local farmers. Several broad, yet notable conclusions may be drawn from the case studies. First, consistent with the survey data, none of the respondents in the case study districts named their activities as farm to school programs, per se. The growing literature, including various "how-to" guides and outreach materials, tends to describe and prescribe farm to school as a relatively specified cohesive and coherent set of integrated school practices, aimed at increasing the supply of locally grown foods served in school cafeterias and supplementing such procurement with various educational initiatives focused on health and nutrition. In this research, FTS activities were found to be more piecemeal, less deliberately labeled as FTS, and less integrated as coherent school initiatives. In the case studies, one person principally initiated the FTS efforts; however, this person sometimes had the support of others, such as teachers or school nurses. Typically (and not surprisingly) the one person most responsible for local FTS efforts was the food service director.[1]

For example, the Mifflin County School District food service director purchases milk from two Mifflin County based suppliers, and in the fall the district buys all of its apples from local growers. In addition, the third grade takes an annual fieldtrip to two local farms and one of the third grade teachers is involved in the Pennsylvania Farm Bureau's Ag in the Classroom program. These combined efforts reflect the county's strong identity as an agricultural area and the school's responsiveness to that identity.

However, while in some ways consistent with some aims and origins of FTS, as understood nationally (valuing local agricultural identity and seeking to support the local economy), neither the food service director nor the third grade teacher formally frames their efforts in this area as farm to school.

Second, most school district FTS efforts were relatively modest in scope, often consisting of relatively limited purchasing of locally grown foods from area suppliers and wholesalers. For example, Neshannock Township School District purchases locally grown produce from local suppliers and also participates in the *Great Pennsylvania Apple Crunch* sponsored by Pennsylvania Advocates for Nutrition and Activity (PANA). This annual event, focusing on healthful food choices and Pennsylvania produce, encourages schools to serve apples on a specified day in October.

Other district efforts are slightly more developed and integrated, such as the Montoursville School District. There, the food service director not only purchases local apples and milk to serve in the cafeteria, but also works closely with the school nurse and the district wellness committee. The school nurse plays a major role in coordinating events connected to PANA's *Great Pennsylvania Apple Crunch.* The Wellness Committee, which includes Parent Teacher Organization (PTO) members, members from the Lycoming County Health Improvement Coalition and the Twin Hills Health Center,

[1] This, of course, may be because the researchers drew their case study sample from the surveys completed by food service directors. All the same, the researchers saw little evidence of strong FTS activity initiated independently of the district food service.

sponsored a Food and Fun Fair at which seventh graders teach second graders about health and nutrition. The PTO purchased the apples for the PANA event and the nurse has written grant proposals for a variety of nutrition and wellness activities. This level of integrated effort, however, was not common across the case study sites.

However, this should not be interpreted as criticism of efforts at any of the case study sites. More likely it simply reflects the ways in which the organization of school districts can tend to create institutional silos such that synergy across various functional units, such as the food service and the teaching staff, may be constrained because of limited opportunities to coordinate efforts. Administrators from the district superintendent office could play an important role by encouraging dialogue, especially through wellness committees, to explore how resources might be leveraged and opportunities to coordinate and integrate efforts can be enhanced.

The third conclusion emerging from the case studies is that, although FTS efforts in Pennsylvania do not currently assume a single coherent form (e.g., procurement efforts coupled with a more or less standard set of educational activities), they do tend to reflect the local needs, resources and constraints of a given district. For example, as noted earlier, Mifflin County School District's FTS efforts center strongly on the county's agricultural identity. Pittsburgh's FTS efforts, on the other hand, take a very different form, in large part due to the size of the district and its location in Pennsylvania's second largest metropolitan area.

The Pittsburgh School District serves 13,000 meals per day, prepared at one central kitchen. The district food service purchases fruits and vegetables from local distributors, who in turn purchase some of the produce locally. However, because of the scale of the food service and the level of automation required in producing meals at such volume, local procurement efforts can be limited at best. Pittsburgh School District's FTS efforts instead revolve mainly around Edible Schoolyards, in cooperation with Grow Pittsburgh, a project associated with Penn State Cooperative Extension.

Grow Pittsburgh staff help develop school gardens, and coordinate classroom activities focused on composting and urban agriculture. High school students serving as summer interns develop a nutrition class and teach nutrition to younger students attending summer school programs. At harvest time, Grow Pittsburgh wheels in a propane stove to the school garden where a professional chef prepares food grown in the garden, giving students samples to taste. The Grow Pittsburgh executive director said that students, parents and teachers have enthusiastically received this activity. The garden is used at all grade levels in the K-4 elementary school. In addition to teaching students about growing food and developing healthful eating habits, the Edible Schoolyards have also provided an enhanced sense of community and teamwork.

Across the case studies, local stakeholders stressed different benefits from FTS efforts. To a certain extent, the benefits identified and the way that the overall effort was described depended on whom the researchers interviewed. Teachers tended to emphasize educational opportunities in FTS. Nurses, parents and administrators emphasized education, but also health and wellness benefits, and improving connections to the community.

Farmers in the mini case studies emphasized benefits of FTS as having an additional market for their products. Some farmers, such as those running orchards, are able to host school visits. This provides additional visibility and promotion for their products. Selling fruit directly to schools might yield farmers a better price than that offered through sale to a distributor.[2] Schools also serve as purchasers with relatively consistent demands, unlike restaurants, which tend to purchase in smaller quantities and may have varying needs for produce depending on economic changes or weather conditions.

Yet, despite much identification of opportunities and benefits, the mini case studies brought out challenges for FTS efforts, too. Problems with the seasonal availability of local foods were mentioned. Some districts identified constraints related to current kitchen staffing and their capacity to process local whole foods for cafeteria meal service. Local health codes and food safety were also concerns that made some districts cautious about purchasing directly from local farmers.

This may be part of the reason this research found that local food purchasing, when it occurs, tends to occur more often through local suppliers and distributors. Additionally, food service directors may simply lack knowledge about who and where local growers are and how to establish productive purchasing relationships. Smaller scale individual farmers are often unable to meet the quantity requirements of some larger districts' purchase orders. Delivery demands may also be an impediment for local growers.

[2] The research team was also told the opposite. A fruit grower in Montoursville said that because of district budget constraints the school was not able to pay a price for local apples that the grower could justify economically.

Conclusions

Farm to school programs have many possible elements. Connections between various potential stakeholders and across functions are key if FTS programs are to develop the synergies that will broaden commitments and ensure success. FTS programs connect local farmers with school food service providers, and they connect school communities with agricultural landscapes that may have been taken for granted. Farm to school programs can serve entire school districts, or may involve just one or two classrooms. In these ways and more, farm to school programs may enhance the physical health and nutrition of students, the economic health of local communities and agricultural producers, and the environmental health of local landscapes.

Wellness mandates, increased concern about child obesity and health, awareness of how school district purchasing patterns may affect local economies and the structure of local agriculture, and sensitivity to the connections between school and community all create favorable conditions for FTS efforts within Pennsylvania school districts. However, there are also real challenges – economic, institutional, policy-related and geographic – that farmers and schools must address to realize the potential of FTS. Few districts in Pennsylvania conduct what they would self-describe as "farm to school" programs. Yet, there is ample evidence of nascent FTS activity and interest in various farm to school efforts. With the aim of strengthening the school-community connection in Pennsylvania, and by extension, the health of the state's youth and landscapes, the guidebook developed as part of this research represents a timely and useful resource. It can support planning, learning and implementation by school administrators, nurses, teachers, food service directors, farmers and others, who are ready to work together to craft FTS programs that match the needs and resources in their regions of Pennsylvania.

Policy Considerations

There are both direct and indirect policies that can support the development and sustainability of FTS programs in Pennsylvania. Some policies may specifically address the organization and development of FTS programs, such as grant programs and dedicated state-level personnel with responsibilities to support FTS programming. Other policies may more broadly create an institutional environment favorable to FTS programming, such as bidding and purchase preference policies that increase the capacity of school districts to buy from local producers. The following is a comprehensive set of policy considerations aimed at local, regional and state policymakers to facilitate the expansion and sustainability of FTS efforts across the commonwealth.

Establish a statewide farm to school coordinator within the Pennsylvania Department of Agriculture, and ensure coordination with key agencies such as the Departments of Education and Health.

This study suggests that, to date, much of the effort to develop FTS programming in Pennsylvania is occurring in individual schools and districts. Working knowledge about FTS at the local level often tends to be limited, with few opportunities for sharing information across schools and school districts. To move beyond repeatedly "reinventing the wheel," a state staff person or office could play a critical role in disseminating information, providing technical assistance and training resources, and helping to connect schools and Pennsylvania food producers. Because of its existing programs and initiatives to support new entrepreneurial opportunities in local and regional agriculture, the Department of Agriculture would be an appropriate and effective home for such a position. Several other states that have created state FTS coordinators locate such a position within state Departments of Agriculture, although often with significant coordination with state Departments of Education.

Oklahoma, a state with a similar number of school districts to Pennsylvania, many of them rural, established a statewide program in 2007. Connecticut has a more established state level FTS program providing promotional materials, and lists of participating school districts, participating farmers, and wholesalers/distributors with local products. Oregon has a statewide FTS coordinator, like Oklahoma and Connecticut, based within the state Department of Agriculture. In February 2008, however, the Oregon House of Representatives unanimously passed a plan to hire an FTS coordinator based within the Oregon Department of Education to work in collaboration with the Department of Agriculture FTS coordinator.

Additionally, in February 2008, the Maryland General Assembly introduced a bill establishing a state-level farm to school program. This program facilitates the sale of Maryland agricultural products to schools and state facilities. Similar to Oregon, it further establishes one full-time position within the Maryland State Department of Education and one half-time position within the Maryland Department of Agriculture to

coordinate these efforts. Among other functions, the program establishes specific promotional events including a Maryland Homegrown School Lunch Week. These examples demonstrate several existing and emerging state-level models of FTS support that could inform efforts in Pennsylvania.

Offer small grant programs to support schools developing farm to school initiatives and evaluate their impacts.

Small grant programs can support local development of FTS efforts. For example, Act 184 (2006), the Healthy Farms and Healthy Schools Act, combines both food procurement and educational objectives associated with FTS. Inspired by The Food Trust's Kindergarten Initiative, the act is directed at all public, charter and non-public schools in Pennsylvania to enable kindergarten classrooms to integrate agriculture and nutrition education. It makes grants available for 75 percent of costs of the program, up to $15,000 annually per school. The Pennsylvania Department of Agriculture is the lead agency, in consultation with the Pennsylvania Departments of Education and Health. This classroom-based program represents a significant opportunity to extend FTS in Pennsylvania.

Although this program has already been tried and evaluated in Philadelphia, there remains much to learn about its broader impacts in schools across the commonwealth. Instituting feasible and appropriate monitoring and evaluation across grant sites would help to determine programming impacts and provide insight into how resources may be best allocated. For example, do schools modify, extend or abandon the program when grant funds are spent? How can practical knowledge and achievements of early grant recipients be communicated to later and prospective grant recipients to enhance their efforts? What changes are actually attributable to these programs, in terms of nutritional outcomes, or farm incomes? Systematic evaluation that can directly inform policy as well as organizational learning must be recognized as a critical part of the effort to create effective and sustainable FTS programming. Statewide coordination could play an important role in disseminating this information. Such evaluation needs may also be addressed through partnership with national foundations or even regional or community foundations, which are increasingly interested in the intersection and impacts of sustainable agriculture, health initiatives and community development.

Make bidding and purchase preference policies more intelligible and amenable to the development of farm to school across the range of school settings in Pennsylvania.

Although there is widespread concern in the literature and among practitioners that bidding and purchasing policies impede local procurement by schools and districts, such concern was not the foremost concern among the respondents in this research. While one might claim that formal farm to school programs are not yet widespread in Pennsylvania precisely because of obstacles in bidding and purchasing policies, the situation is actually more complex, due to confusion about the respective role and intent of federal vs. state regulations, and due to the variability across school districts in Pennsylvania, which has both very large (often urban) and very small (more typically rural) school districts.

The 2002 Federal Farm Bill included language that seemed to encourage the procurement of local food by states as part of school food service programs. Nonetheless, federal interpretations of that legislation resulted in some uncertainty on the part of school district food services about the acceptability of geographic preferences in school food procurement, especially if using federal dollars. Thus, some school districts, though interested, refrained from pursuing local food purchasing.

The 2008 Federal Farm Bill explicitly encourages local purchasing by school districts participating in the National School Lunch Program. School districts are encouraged (though not required) to purchase "unprocessed" agricultural products, both locally grown and raised, to "the maximum extent practicable and appropriate." "Agricultural products" in the current legislation include fruit, vegetables, milk, eggs and meat (but not processed dairy products, such as cheese or yogurt). The term "unprocessed" still allows for some minimal processing, such as washing and bagging of fruits and vegetables, pasteurization of milk, and handling or cleaning of eggs.

The variability in scale and complexity of Pennsylvania school districts becomes relevant for bidding and purchase policies insofar as smaller and self-managed school district food services (often, though not always in rural areas) are more likely to be making food purchases under the federal and state small purchase thresholds. When making purchases below these thresholds, food service operations have more freedom to go beyond price to take into account quality and provenance. Self-managed food services also may have more latitude than centrally (or even nationally) managed food services to explore and develop purchasing arrangements with small and local suppliers.

A state-level farm to school coordinator could play a role in disseminating clear and useful information about how federal and state school food purchasing policies affect Pennsylvania school districts of different sizes. A state-level farm to school coordinator could also promote discussion with leading food service management companies now handling district food services in Pennsylvania about how to address growing public interest in increasing local and regional supplies. Regional divisions of Sysco, for example, have responded to such

"grassroots" interest in local food supplies in their handling of college food service accounts.

Provide an additional state reimbursement for meals, already reimbursed on the federal level, that also incorporate Pennsylvania-sourced foods.

Such policies have been instituted in other states as a way of increasing provision of fruits and vegetables (a priority of wellness policies) and also building incentives for local purchase of those fruits and vegetables. New York State, for example, allocates an additional 20 cents per student meal purchased through the National School Lunch Program if it includes direct purchased New York agricultural products.

Streamline school and district payment procedures to increase participation of smaller-scale farmers.

Smaller farmers may have difficulty carrying substantial accounts receivable, and find long times to payment a disincentive to supplying local school districts. School districts that typically approve and process payments only when school boards meet may need to develop more flexible and timely payment policies and procedures in their dealings with local farmers. At the same time, farmers who wish to supply schools or districts directly need to recognize that it is unlikely they will receive a check upon delivery. Reconciling the cash flow needs of farmers and the accounts payable practices of districts may point to the importance of local distributors to mediate such exchanges.

Support development of local and regional food system infrastructure.

Processing, storage and transport of local foods for use in schools pose a barrier to the development of farm to school programs. State seed monies or cost/share programs could be allocated for encouraging investment in facilities and infrastructure that would fill in, rebuild and enhance the "supply chain" from farm to school. Public resources should be used to leverage private investment and local/regional entrepreneurship that supports farm to school initiatives, but also provides infrastructure to enhance local agriculture and regional food system development, more generally. Among the infrastructural resources that have supported local and regional food system development elsewhere are purchases of coolers, refrigerated trucks, and processing equipment to handle specific commodities, such as carrots.

Provide technical assistance/support for Good Agricultural Practices (GAP) certification compliance by farmers.

Emerging Good Agricultural Practices (GAP) certification is a voluntary program intended to strengthen consumer confidence in food produced on U.S. farms. However, because this is new, farmers participating in farm to school, as well as other markets, have many questions about GAP certification expectations and procedures. Misunderstandings about what GAP certification involves, when it applies and how to comply with its requirements could diminish the pool of producers willing and ready to supply food to Pennsylvania schools. While valuable web-based resources have become available on GAP, direct training and education for producers would be helpful. Resources should be made available to qualified information providers, such as Penn State Cooperative Extension, to develop and deliver appropriate training, in person or electronically, to prepare current and prospective farm to school farmers for understanding and meeting this requirement, as appropriate.

Integrate information about farm to school options into the work packages of all Pennsylvania school wellness committees.

While school wellness committees appear to be responding to the message of "more fruits and vegetables," fewer are aware of how farm to school can address other school and community goals. Official steps to make farm to school part of the "menu" of ideas and options that wellness policies consider taking on could build multiple stakeholder commitments and interest that would strengthen farm to school.

Pennsylvania Advocates for Nutrition and Activity (PANA), an initiative established by the Pennsylvania Department of Health and supported by funding from the Centers for Disease Control and Prevention, is already well-placed to assume this role, especially through their Keystone Healthy Zone School Programs (see www.panaonline.org).

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